

SOME OBSERVATIONS ON TWO ECOLOGICAL RACES
OF *ALLIUM TRICOCCUM* IN KALAMAZOO
COUNTY, MICHIGAN

CLARENCE R. HANES AND MARION OWNBEY

REPEATED observations on *Allium tricoccum* Ait. both in the wild and in the garden have revealed the existence of two well-defined ecological races of this species in Kalamazoo County, Michigan. One race prefers low moist woodlands, where a single patch may often occupy several acres of low ground. The other is found, usually, in small scattered patches only, in upland beech and maple woods. The two races rarely, if ever, occur together. For convenience in the following discussion they are referred to as "Race A" and "Race B", respectively.

RACE A.—Plants of Race A are in every way conspicuously larger than are those of Race B, both in the wild and under cultivation. The leaf-blades vary from 22 to 26 cm. long, and from 4 to 7 cm. broad, and are more nearly elliptic in outline than are those of Race B. The sheaths and well-developed petioles are reddish, and the scape is from 25 to 34 cm. tall. From herbarium specimens, and from descriptions in existing manuals, it appears that this is the common race eastward, and, therefore, likely the typical element of the species.

In Kalamazoo County, Race A is very abundant in Section 20, Prairie Ronde Township, where it occurs with swamp birch, tamarack, white elm, red ash, etc. It also occurs in moist soil in sections 14 and 33, Climax Township, in Section 19, Brady Township, and along the Kalamazoo River in sections 27 and 28, Comstock Township. At Cooper's Glen, north of Kalamazoo (Section 27, Cooper Township), it grows on a wooded hillside which may be somewhat springy.

RACE B.—The leaf-blades of Race B vary from 20 to 22 cm. long, and from 1.3 to 3 cm. broad. They are more lanceolate than elliptic in outline. The sheaths and petioles are greenish, and the latter are often very short. The scape is less than 25 cm. tall.

Race B occurs principally in upland woods of beech and maple. It has been found in sections 4, 5, 16, 19, 22, 24, 26, and 30, Prairie Ronde Township, and in Section 18, Schoolcraft Township. Mostly, it occurs on the western side of the county. In Section 30, Prairie Ronde Township, only, has it been observed

to occur in marshy ground. It grows also in Porter Township, Van Buren County.

In localities where Race B is the prevalent form, occasional plants with the typical narrow leaves, but with sheaths of a slight pinkish cast, may be found. Also, among the broad-leaved plants of Race A, infrequent individuals may fail to develop the characteristic reddish color in the sheaths and petioles. This is the extent to which intermediacy or intergradation between the two races may be said to occur.

An interesting physiological difference between the two races is their differential development when grown side-by-side as they have been in the first author's garden for the last eight years. Race A appears from a week to ten days earlier in the spring than Race B, even though the weather may be continuously warm. In 1941, for instance, Race A was 2.5 cm. above the ground on April 6, whereas Race B had not yet appeared on April 13. On April 18, Race A was 21 cm. tall, while Race B stood only 9 cm.

The determination of the proper taxonomic designations for these two entities is complicated by the description in 1808 of *Allium triflorum* Raf., and the present inaccessibility of authentic material of either this or of *A. tricoccum*, if it still exists. The original description of neither is conclusive. Aiton stresses the nude, semiterete scape, lanceolate-oblong, plane, glabrous leaves, globose umbel, and solitary seeds, while Rafinesque describes the stem as cylindrical, 3-flowered, and shorter than the plane, cuneiform, lanceolated, acute, multinervous leaves. Rafinesque states that *A. triflorum* came from North Pennsylvania, whereas North America alone is indicated as the source of *A. tricoccum*. In 1770, this would have meant only the Atlantic slope.

No systematic attempt has been made to determine the distribution of the two races outside of Kalamazoo County, although Mr. C. A. Weatherby writes that narrow-leaved specimens with no red color in the petioles from as far east as South Berwick, Maine, are preserved in the Gray Herbarium, but that these are not so extreme in these respects as is the mid-western material. Also in the Gray Herbarium, according to Mr. Weatherby, are specimens collected in 1877 by Dr. J. H. Burdick at Milton, Wisconsin, which he sent to Dr. Gray with the following descriptions:

Purple var.—No. 1

Leaves narrowly elliptic or elliptic-lanceolate tapering into a purple petiole (above ground) about one-third the length of the leaf, which is *bright green and shining*.

Scape deep purple.

Green var.—No. 2

Leaves lanceolate, *pale green and glaucous*. Petiole hardly any (above ground), *white*. *There is no purple about the plant*.

Scape pale green.

Dr. Gray and Dr. Watson were not disposed to recognize Burdick's varieties as anything more than response to environmental factors. Burdick wrote twice later, maintaining his opinion, and in one letter suggested a varietal name for the race with colored scapes. He does not seem to have published on the subject. His letters are preserved at the Gray Herbarium.

Bulbs of both races were sent to the second author in 1940, and the differences pointed out remain constant in the experimental garden at Pullman, Washington. In spite of its late start, Race B flowers several weeks in advance of Race A in the garden under Washington conditions. In Michigan, such a lag has not been noted. The differences shown by the two races are such as are frequently shown by diploid and tetraploid races of the same species, but the chromosome number of both Race A and Race B as determined by Dr. Hannah C. Aase (unpublished) is diploid, $n = 8$.

Schoolcraft, Michigan; State College of Washington.

MUHLENBERGIA SETOSA AN UNTENABLE NAME.—In his realignment of the common rhizomatous species of *Muhlenbergia* of eastern North America (RHODORA 45: 221–239. 1943) Professor Fernald has demonstrated that the eastern plant which had for so long been passing under the name *Muhlenbergia racemosa* is amply distinct from true *M. racemosa* (Michx.) BSP. of the interior. For the eastern segregate he took up the name *Muhlenbergia setosa* (Spreng.) Trin. ex Hook. f. & Jackson, Ind. Kew 2: 269 (1897), later (RHODORA 47: 198. 1945) corrected to *M. setosa* (Biehler) Trin. ex Hook. f. & Jackson. There is, however, an earlier *Muhlenbergia setosa* which was overlooked by the compilers of the Index Kewensis, namely *M. setosa* (HBK.) Kunth, Rev. Gram. 1: 63 (1829), based upon *Podosaemum setosum* HBK. Although the latter name is currently treated as a synonym of